Microsoft

Microsoft®
Web Store

For IT Administrators

Abstract

The Microsoft® Web Store presents new opportunities for both developers and IT administrators. Because the Web Store allows consolidation of heterogeneous types of data — such as collaborative, file system, and Web data — into a single, scalable infrastructure, IT administrators can lower administration costs of their systems. The Web Store leverages current client technologies to access information contained in the Web Store, allowing administration costs to decrease and user productivity to rise.

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INTRODUCING THE WEB STORE

The Web Store is one of four key initiatives Microsoft has announced to deliver its vision of knowledge workers without limits. A primary goal of these initiatives is to remove existing barriers to collaboration faced by today's knowledge workers. The Web Store combines the features and functionality of the file system, the Web, and a collaboration server through a single location for storing, accessing, and managing information, as well as building and running applications. It establishes a platform for information management that includes consistent search and data categorization.

The Web Store integrates knowledge sources by providing a single repository for managing e-mail messages, documents, Web pages, and other resources within one infrastructure. The Web Store supports offline access, remote client access, and support for a range of APIs. In addition, the Web Store serves as a platform for unified messaging, where knowledge workers can access personal information, such as their calendar and contacts, as well as e-mail and voice mail messages.

Any enterprise-based application requires three key services:

- ***File System Services*** – to allow clients such as Microsoft® Office to read and write documents, as well as store streaming data such as audio and video. This includes a data model that supports both hierarchical collections (folders) as well as heterogeneous collections (folders that accept any file type).
- ***Database Services*** – for queries more complex than those performed within the file system. Database services are also required; for example, atomic updates allow applications to display a consistent view to end users when updates involve more than one item in the Web Store.
- ***Collaboration Services*** – for messaging, contacts, and calendaring support, as well as group and real-time collaboration.

The Web Store delivers all of these services in a single, integrated package, making it easier to find, use, and share information. Application developers can use the Web Store to expand their use of Microsoft® Exchange Server, Microsoft Office 2000, and Microsoft® BackOffice® as platforms for information management, and to provide a wide range of business solutions that lower the total cost of ownership and improve productivity throughout their enterprise.

WEB STORE FEATURES

The Microsoft Web Store introduces a number of new features that help lower the total cost of ownership for IT administrators, and increase the productivity of end users.

HTTP, WebDAV, and XML Support

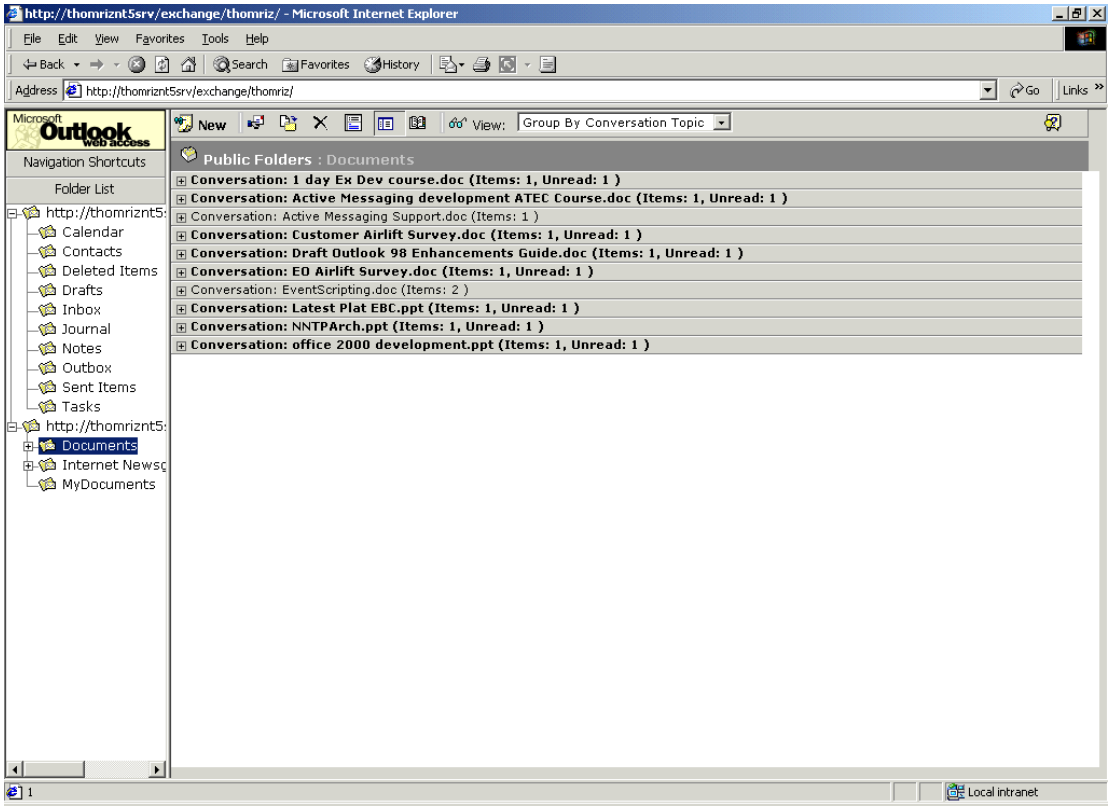
The most important feature of the Web Store is its ability to access every item contained in the Web Store via the HTTP Web protocol. Each folder and item has a unique, human-readable URL associated with it.

Using current Web servers, such as Microsoft® Windows NT® Server with Microsoft® Internet Information Services (IIS), developers must enable the HTTP request to access files or records. The Web Store is by default configured to integrate automatically with Web servers. This means that developers won't have to write a single line of code to make each Web Store item and folder URL-accessible. In addition, the Web Store can be accessed through Distributed Authoring and Versioning (WebDAV), a set of HTTP extensions.

In addition to providing access through HTTP and WebDAV, the Web Store is an XML store. By supporting XML, the Web Store can provide content in an Internet standard format. This makes it easier for IT administrators to provide data access services to their developers who need to query and modify information contained in the Web Store.

Rich HTML Support

The HTML support built into the Web Store allows administrators to provide Web access for end users. The Web Store provides an automatic HTML 3.2 view of object folders by rendering a graphical view of a folder with documents, using properties promoted from each folder item. In addition, the Web Store provides native support for advanced Web browsers that support HTML 4.0.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Conversation: Active Messaging development ATEC Course.doc (Items: 1, Unread: 1)
Conversation: Active Messaging Support.doc (Items: 1)
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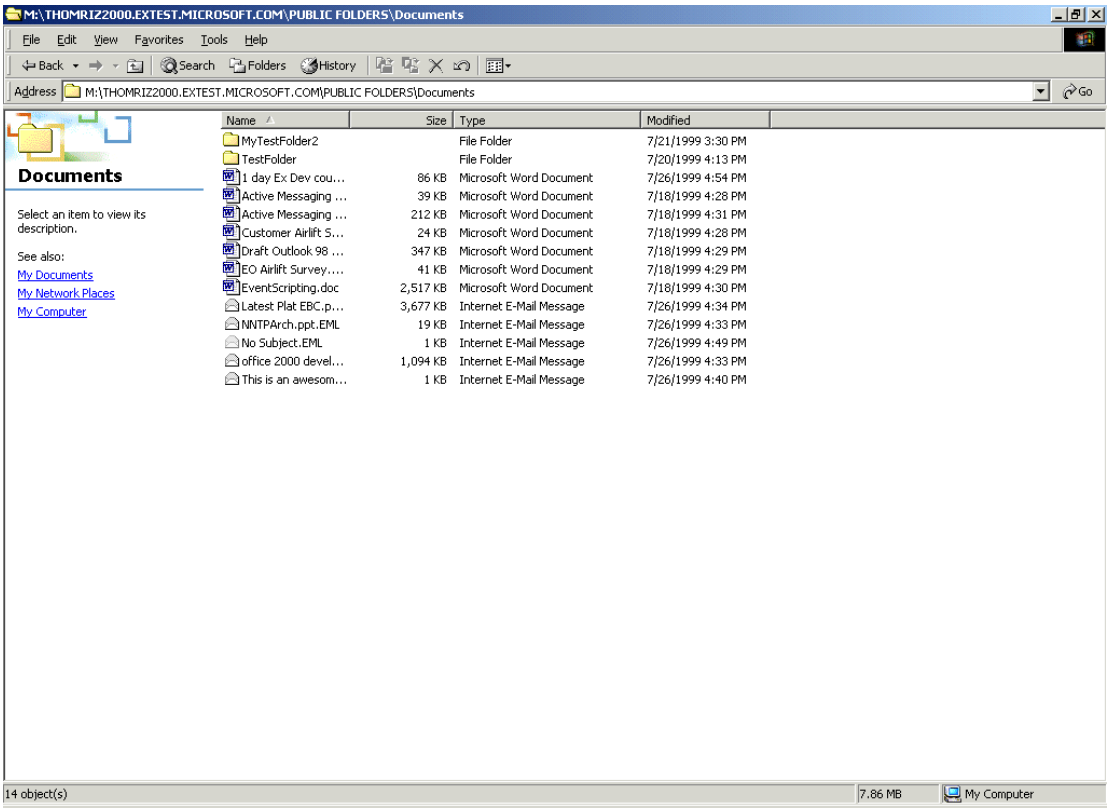
Conversation: Draft Outlook 98 Enhancements Guide.doc (Items: 1, Unread: 1)
Conversation: EO Airlift Survey.doc (Items: 1, Unread: 1)
Conversation: EventScripting.doc (Items: 2)
Conversation: Latest Plat EBC.ppt (Items: 1, Unread: 1)
Conversation: NNTPArch.ppt (Items: 1, Unread: 1)
Conversation: office 2000 development.ppt (Items: 1, Unread: 1)
Local intranet

Figure 1: An HTML view of documents stored in the Web Store. The Web Store supports rich HTML views, including sorting and grouping content to make it easy for users to find information.

Microsoft Win32 Support

To leverage functionality built into the file system, the Web Store supports the same interfaces that developers use to read and write data to the file system. Specifically, on a Windows platform, it supports Microsoft® Win32® interfaces such as CreateFile, ReadFile, and WriteFile, allowing administrators to share data in a Web Store in the same way that files can be shared on a file server (for example, **net share** and **net use**). This way, many Web applications that are built completely on the file system can be ported to the Web Store simply by changing the virtual directory mapping to reference the Web Store rather than the file system.

This Win32 support makes it easy for end users to use familiar tools to access their documents, e-mail and voice mail messages, and other file types.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Go
Documents
Select an item to view its description.
See also:
My Documents
My Network Places
My Computer
Name Size Type Modified
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TestFolder File Folder 7/20/1999 4:13 PM
1 day Ex Dev cou... 86 KB Microsoft Word Document 7/26/1999 4:54 PM
Active Messaging ... 39 KB Microsoft Word Document 7/18/1999 4:28 PM
Active Messaging ... 212 KB Microsoft Word Document 7/18/1999 4:31 PM
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Draft Outlook 98 ... 347 KB Microsoft Word Document 7/18/1999 4:29 PM
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NNTPArch.ppt.EML 19 KB Internet E-Mail Message 7/26/1999 4:33 PM
No Subject.EML 1 KB Internet E-Mail Message 7/26/1999 4:49 PM
office 2000 devel... 1,094 KB Internet E-Mail Message 7/26/1999 4:33 PM
This is an awesom... 1 KB Internet E-Mail Message 7/26/1999 4:40 PM
14 object(s)
7.86 MB
My Computer

Figure 2: The same documents shown in Microsoft Windows Explorer. Because the Web Store supports file system access to information, end users can use standard Microsoft Windows tools to retrieve content in the Web Store.

Scripting Support

Many Web applications require more functionality than Win32 calls to the file system. Specifically, a number of applications use scripts to add functions that are more complex than serving up static HTML documents. The Web Store supports the hosting of Microsoft® Active Server Pages (ASPs) because it makes every item in the Web Store accessible by URL.

However, scripting support is more complex than the mere ability to host ASPs. The Web Store also supports the same database interfaces used by Microsoft® ActiveX® Data Objects (ADO) scripts in building data-intensive Web applications. The Web Store comes with the Microsoft® OLE DB 2.5 provider that supports ADO scripting, as well as database services, such as SQL query and transaction support. The Web Store query support includes full-text content indexing to allow efficient retrieval of all items in the Web Store that contain a string for a single folder or hierarchy of folders.

Streaming Store

The concept of what constitutes an e-mail message is changing dramatically. Today, an e-mail message can be anything from a simple piece of text to a message with extremely large audio and voice components. These multimedia files have enriched the messaging and collaboration experience for many users, but also place new demands on the messaging system.

The streaming store feature of the Web Store addresses this evolution and enables the Web Store to natively store very large messages and attachments, including multimedia files. Clients can access multimedia data very quickly through file streaming interfaces, increasing the performance and scalability of a system that uses the Web Store. The Web Store enables the streaming media feature of Microsoft® PowerPoint® 2000, which allows PowerPoint slides to be saved as a Microsoft® NetShow™ file. The streaming store helps ensure the fidelity of data and lowers the number of file conversions required.

Because the Web Store enables administrators to provide streaming media support directly from a Web Store, administration and management of streaming resources are the same as managing any other type of Web Store content.

Built-In Content Indexing and Search

To provide very fast searches and lookups, the Web Store database manages indexes for common key fields. Microsoft® Outlook® users can search for documents in the Web Store as easily as they search for e-mail messages today, increasing user productivity. With full-text search, Microsoft Outlook text searches become extremely fast. Outlook searches that used to take several minutes complete in seconds. Additionally, attachments are full-text indexed and can be searched as well.

ENHANCED ADMINISTRATION

Single-Seat Storage Administration

Management of a single unified storage system based on the Web Store enables IT administrators to reduce overall operating costs. Operational costs for backup and restore and other ongoing maintenance activities will naturally decline as you manage only one storage engine for multiple applications. Additionally, training costs will be reduced, and the maintenance learning curve lowered because you will no longer need to separately manage mail servers, file servers, and Web servers to host end-user data. The Web Store gives you a single repository for all this and more.

When you deploy the Web Store as your unified storage engine, end users will store mail messages, documents, Web page data, and collaborative information

in the same shared storage space. This process is invisible to end users, even though data can be saved using various front-end clients, such as Microsoft Outlook, Microsoft® Internet Explorer, and Microsoft® Word. Because all servers will be Web Store servers in this scenario, IT administrators need to learn only the tool set to configure, monitor, backup, and restore one type of server. This reduces long-term training costs and lowers the learning curve for both new and experienced IT administrators.

The Web Store extends all of the management features traditionally available for messaging and collaboration data to document storage of all kinds, allowing central configuration of, for instance, data replication topology, database storage quotas, and granular administrative and end-user access control.

Scalability and Control

Web Store technology enables administrators to distribute their storage across multiple physical databases, a design feature that provides a number of administrative advantages. Your Web Store can grow in a virtual sense while you limit risk and maintain granularity of control by using multiple databases to keep individual database sizes small. Multiple databases can be used to improve backup and recovery time, ensuring conformity to service level agreements, while at the same time enabling you to scale servers like never before. Your server capacity is limited only by the amount of hardware storage available. You can increase the virtual storage capacity of the Web Store by distributing data on multiple databases, while presenting a unified interface to end users.

Multiple databases offer administrators a wide range of design flexibility. Administrators have a wealth of options for distributing data across the multiple databases available within the Web Store.

For example, databases can be targeted toward specific classes of users. On a given server, for instance, data for executives may be stored in a different set of databases than data used by other employees. This enables IT administrators to control the configuration parameters for each group, such as the content indexing settings, data retention intervals, and folder storage limits. In addition, service levels and outage time resulting from failure can be controlled through the amount of data that is allowed to be stored on each database.

Alternatively, data can be randomly distributed across all databases on a server to minimize the effects of a disaster on one particular department or function of an organization. For example, data for your finance, accounting, and legal departments can be equally shared across three storage databases. If a failure occurs in any one of these databases, none of the departments are severely affected.

In both of these examples, the administrator maintains control over deciding in which database data should reside, and for determining the configuration parameters of each database in the system.

Reliability

The Web Store offers unparalleled reliability to ensure the integrity of mission-critical data.

At the database level, the Web Store supports transaction logging. It uses write-ahead transaction logs to ensure data integrity through redundancy, and to provide transactional security. Committed transactions, such as saving an item in a folder, are written to disk with assurance. Temporary interruptions, such as power failures, will not result in data loss because the transaction logs can be used to restore data to the database files.

At the folder level, the Web Store supports data replication, so that even if one of your servers is down, replicas of that data can exist on other servers in the organization. In addition, folder replica management allows administrators to effectively load balance application access.

Reliability is also improved in the Web Store through support for multiple databases. The use of multiple databases means that a failure in a single database may have little affect on the overall downtime of a larger system. The failed database can be restored while the other databases remain mounted and in service.

At the system level, the Web Store fully supports Windows 2000 active/active clustering. Web Store services on one machine can accept control over data being managed by the Web Store service on another machine that has just experienced a failure, thereby minimizing any downtime. This seamless transition of control from one Web Store service to another is invisible to end users.

Fine-Grained Security

The Web Store extends the security model in Windows 2000 to individual items and fields. Using Windows 2000 Access Control Lists (ACLs), you can grant or deny permission to a user to read, write, edit, or delete specific items. Thus, a user’s view of a folder’s contents is determined on an item-by-item, or even a field-by-field, basis.

Native Windows ACLs are used in the Web Store. A single set of security groups needs to be administered only once to apply to data stored in both the Web Store and Windows 2000 file shares. In fact, administrators can use the ACL editor found in the Windows 2000 Explorer to set permissions on individual items in the Web Store. Again, a single paradigm for security management enables administrators to control and reduce training costs.

Microsoft Windows 2000 Integration

The Web Store is designed for optimal management within the Microsoft® Windows® 2000 environment. It can fully leverage Active Directory configuration information while fully supporting the security settings enabled by Windows 2000 ACLs. Administrators already familiar with Windows 2000 administration will find it easy to support and manage the Web Store because many of its concepts are the same. The Web Store is fully integrated with Windows 2000 security and file system infrastructures, and supports management via the Active Directory and the Microsoft® Management Console (MMC).

Client Diversification

The Web Store allows users to access information using any client. This saves keystrokes and time: it's quicker and more efficient to go directly to the file you want from the client you are using, instead of exiting your current application and opening a new one. Because the Web Store supports a number of standards, end users can leverage their existing tools, such as Microsoft Internet Explorer, Microsoft Office, or Microsoft Windows Explorer, to create, access, and modify content in the Web Store. This immediately reduces total cost of operation because end-user training is not required, while administrators can take advantage of the advanced administrative functionality of the Web Store.

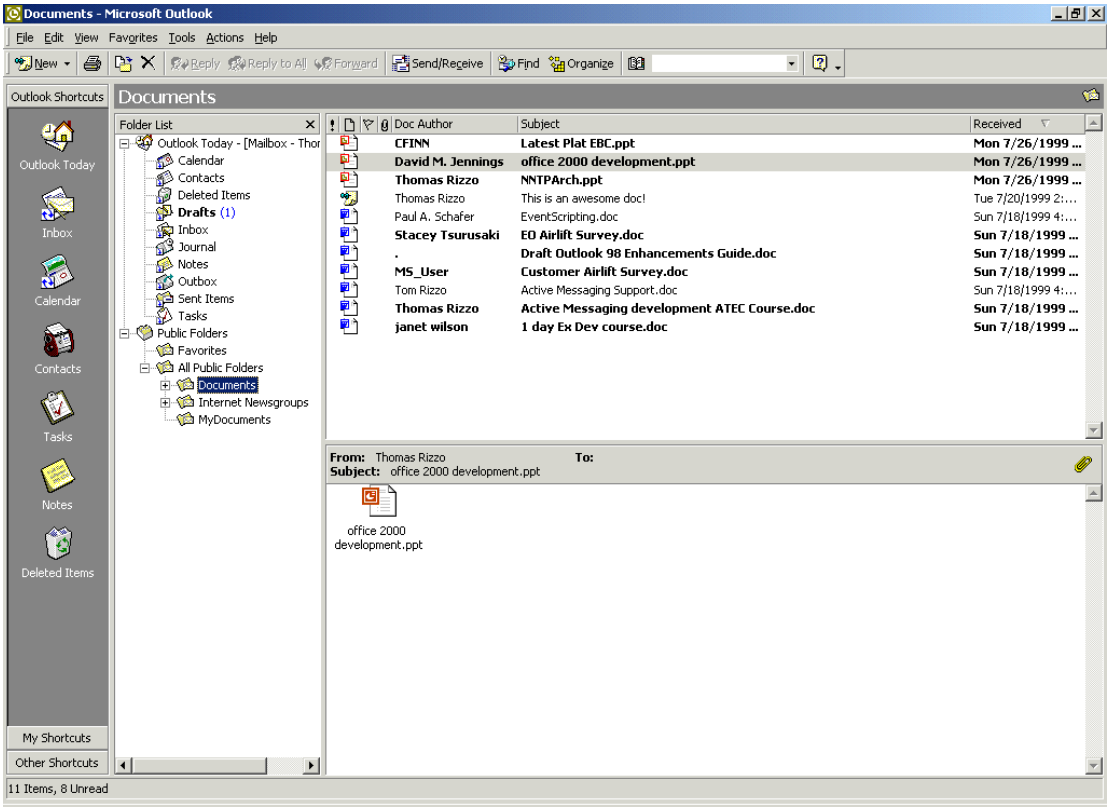


Figure 3: **Because the Web Store supports many clients, end users can leverage existing tools to access information in the Web Store. In this figure, Microsoft Outlook 2000 displays documents contained in a Web Store folder.**

Storage Unification

With the Web Store, all user documents and applications can be kept in a single store. Because all information is stored in a central location, end users need to look in one place only to access documents, discussions, or other type of collaborative information stored in the Web Store. In addition, IT administrators must set up and administer only one technology, while providing end users with the best collaborative solution to their business problems.

The Web Store natively supports Internet protocols, allowing end users to find and retrieve information in the Web Store using any Internet standard client. Two protocols, NNTP and SMTP, are specifically supported to allow users to create and view Internet newsgroup discussions, in addition to sending Internet standard e-mail messages using the Web Store technology.

Enhanced Integration with Microsoft Office 2000

The Web Store enables users to directly store and retrieve documents from Office 2000. Documents can be saved directly from any Office 2000 application into the Web Store using the native **Save** dialog box, and easily accessed using the **Open** dialog box.

This allows Office users to leverage the security, replication, accessibility, and powerful workflow capabilities of the Web Store as a repository for Office documents. Users can store all related information, e-mail messages, tasks, documents, or spreadsheets in a single folder, and access this folder from any client, including Microsoft Word, Microsoft® Excel, Microsoft Outlook Express, or any Web browser.

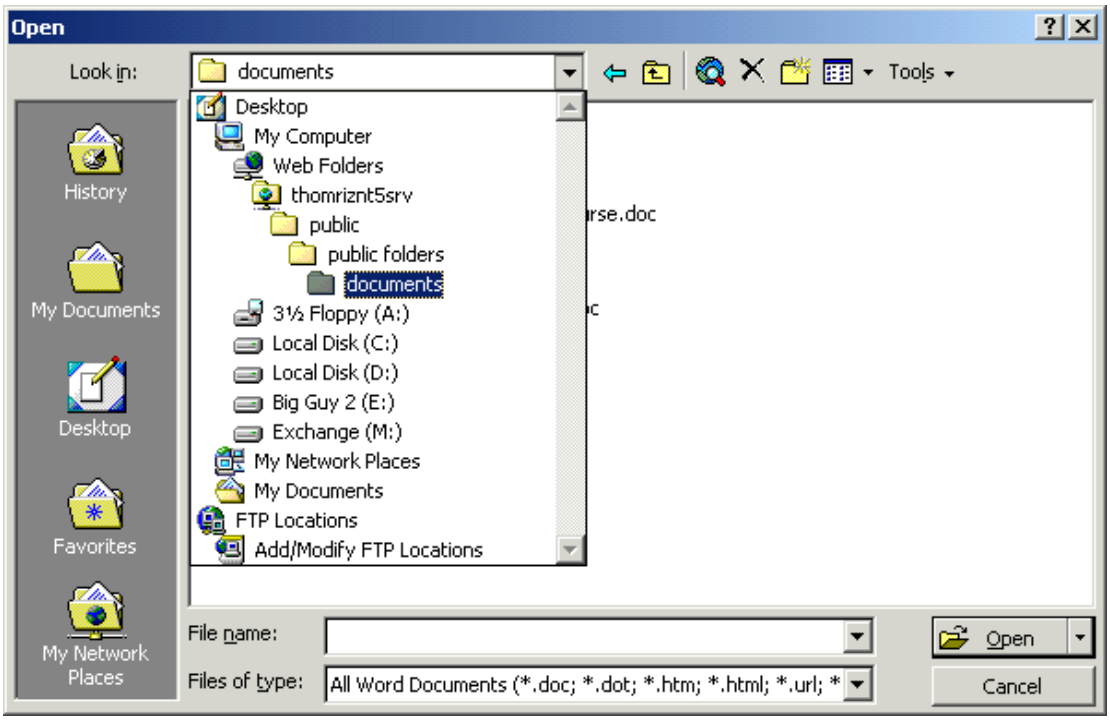


Figure 4: Microsoft Office 2000 users can leverage the Web Folders feature of Office 2000 to access information contained in the Web Store directly from their favorite Microsoft Office applications.

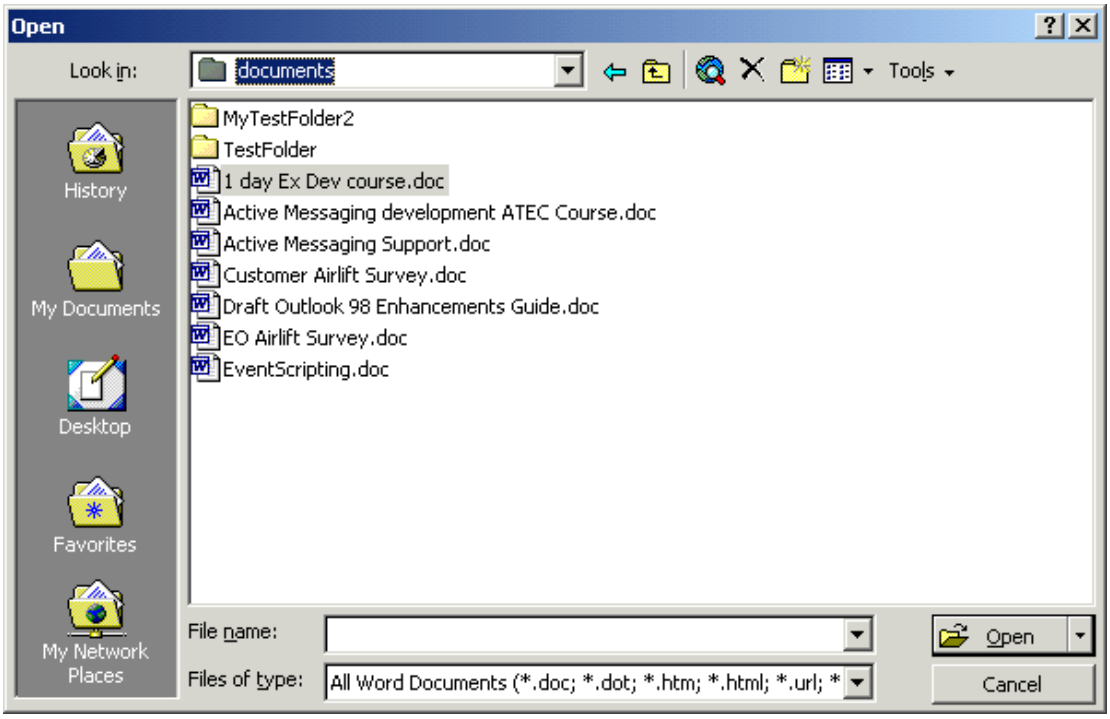


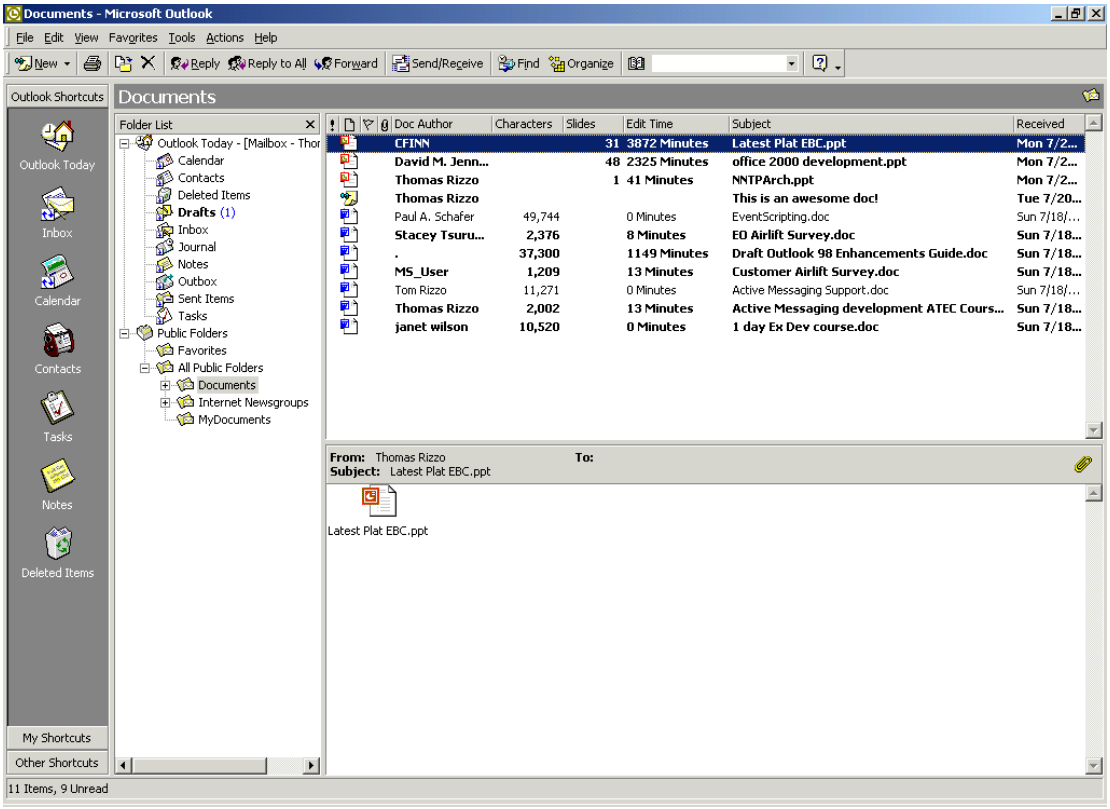
Figure 5: The **Open** dialog box in Microsoft Office 2000. Microsoft Office 2000 can directly access information contained inside of the Microsoft Web Store.

Property Promotion

An important characteristic of the Web Store is its ability to store custom properties of the items stored in its database. This feature takes on new importance as Office documents are stored on the server, enabling Office users to leverage the power of Outlook to view, sort, and manage shared and personal documents with the same tools they currently use for their e-mail, calendar, and contacts.

The property promotion characteristic of the Web Store provides a consistent view of information independent of the client used for access. Properties are automatically promoted from documents, populating all record fields like those for document author, title, and so on. The Outlook Inbox will show all file types as entries; properties for each will be promoted and users can search across all of their files, regardless of application type. Users can access this unified view of information consistently across multiple clients.

Accessing this integrated view of information is easy and efficient, and eliminates the need to open and close applications to view and access different types of data. This unified viewing and access provides a view of all user resources at a glance, enhancing productivity.


Documents - Microsoft Outlook
File Edit View Favorites Tools Actions Help
New Reply Reply to All Forward Send/Receive Find Organize
Outlook Shortcuts
Documents
Outlook Today
Inbox
Calendar
Contacts
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My Shortcuts
Other Shortcuts
Folder List
Outlook Today - [Mailbox - Thor
Calendar
Contacts
Deleted Items
Drafts (1)
Inbox
Journal
Notes
Outbox
Sent Items
Tasks
Public Folders
Favorites
All Public Folders
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MyDocuments
Doc Author Characters Slides Edit Time Subject Received
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David M. Jenn... 48 2325 Minutes office 2000 development.ppt Mon 7/2...
Thomas Rizzo 1 41 Minutes NNTPArch.ppt Mon 7/2...
Thomas Rizzo This is an awesome doc! Tue 7/20...
Paul A. Schafer 49,744 0 Minutes EventScripting.doc Sun 7/18/...
Stacey Tsuru... 2,376 8 Minutes EO Airlift Survey.doc Sun 7/18...
. 37,300 1149 Minutes Draft Outlook 98 Enhancements Guide.doc Sun 7/18...
MS_User 1,209 13 Minutes Customer Airlift Survey.doc Sun 7/18...
Tom Rizzo 11,271 0 Minutes Active Messaging Support.doc Sun 7/18/...
Thomas Rizzo 2,002 13 Minutes Active Messaging development ATEC Cours... Sun 7/18...
janet wilson 10,520 0 Minutes 1 day Ex Dev course.doc Sun 7/18...
From: Thomas Rizzo To:
Subject: Latest Plat EBC.ppt
Latest Plat EBC.ppt
11 Items, 9 Unread

Figure 6: Microsoft Outlook 2000 uses promoted Microsoft Office document properties to display content in the Web Store. By promoting Office document

properties, users can easily find the documents they are interested in viewing or modifying.

Offline Folders

One of the greatest benefits of the Web Store is its seamless online/offline integration. Now, the user will not need to explicitly synchronize folders and data before going offline. Outlook users have always had the powerful replication features that Microsoft Exchange Server provides, allowing collaborative information to be used both online and offline. Now, with offline folders available in Windows 2000, file share users will gain the benefit of synchronized file shares to use when disconnected from their network. With the Web Store, any Windows 2000 user can take advantage of the Offline Folders feature using the Web Store to synchronize the contents of that store, regardless of the client they are using. By integrating their data with the Offline Folders feature, end users can take advantage of a familiar replication model built into the Microsoft Windows operating system without additional training.

With Windows 2000 and the Web Store, collaborative applications become connection-independent.

Native Collaboration Objects

The Web Store provides automatic integration for the most common collaboration functions, including messaging, contacts, calendaring, and workflow, by providing an object model that developers can leverage to access data in the Web Store. This object model, when combined with the powerful development tools that work seamlessly with the Web Store, provides application developers with an ideal collaborative development platform. Furthermore, because these objects are integrated with the Web Store, developers do not have to create time-consuming, individual solutions for these common scenarios.

Leveraged Development Tools

By supporting APIs such as OLE DB and ADO, the Web Store can leverage the powerful development tools found in Microsoft® Visual Studio®, providing increased productivity for developers without additional training. Because the Web Store also supports Internet standards, developers can use standard tools, such as Microsoft® FrontPage®, to develop Web-based applications using the Web Store.

FOR MORE INFORMATION

For the latest information about the Web Store and Web Store technologies, visit the Microsoft Web site at:

http://www.microsoft.com/exchange/

http://msdn.microsoft.com/